MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Group
100 Bureau Drive, Mail Stop 2321
Gaithersburg, Maryland 20899

SRM Number: 1867a
MSDS Number: 1867a
SRM Name: Uncommon Commercial Asbestos
Date of Issue: 12 March 2003

MSDS Coordinator: Carmen S. Davis
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

FAX: (301) 926-4751
E-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: Uncommon Commercial Asbestos

Description: This standard reference material (SRM) is comprised of three uncommon commercial asbestos materials (tremolite asbestos, actinolite asbestos, and anthophyllite asbestos. Each unit of SRM 1867a consists of a set of three bottles, each containing several grams of one of the three mine-grade asbestos materials.

Other Designations: **Actinolite** (actinolite asbestos)

Anthophyllite (azbolen asbestos; anthophylite asbestos)

Tremolite (tremolite asbestos)

Chemical Name	Chemical Formula	CAS Registry Number
Actinolite	Not Available	77536-66-4
Anthophyllite	$(MgFe)_7Si_8O_{22}(OH)_2$ (idealized molecule)	77536-67-5
Tremolite	$Ca_2Mg_5Si_8O_{22}(OH)_2$ (idealized molecuke)	77536-68-6

DOT Classification: Miscellaneous (Class 9) Asbestos
ID #: NA 2212

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Actinolite	100	ACGIH TWA: 0.1 fibers/cc
		OSHA TWA: 0.1 fibers/cc
		Rat, Intraperitonral: TD_{LO}: 50 mg/kg (tumorigenic)
Anthophyllite	100	ACGIH TWA: 0.1 fibers/cc
		OSHA TWA: 0.1 fibers/cc
		Rat, Intraperitonral: TD_{LO}: 250 mg/kg (tumorigenic)
Tremolite	100	ACGIH TWA: 0.1 fibers/cc
		OSHA TWA: 0.1 fibers/cc
		Rat, Intrapleural: TD_{LO}: 100 mg/kg (tumorigenic)

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Actinolite	Anthophyllite	Tremolite
Appearance and Odor: white to green; odorless	**Appearance and Odor:** tan; odorless	**Appearance and Odor:** white to pale green; odorless
Relative Molecular Mass: complex molecule	**Relative Molecular Mass:** complex molecule	**Relative Molecular Mass:** complex molecule
Specific Gravity (water=1): 3.0 to 3.2	**Specific Gravity (water=1):** 2.9 to 3.2	**Specific Gravity (water=1):** 2.9 to 3.2
Vapor Density: not applicable	**Vapor Density:** not applicable	**Vapor Density:** not applicable
Vapor Pressure: not applicable	**Vapor Pressure:** not applicable	**Vapor Pressure:** not applicable
Melting Point: not applicable	**Melting Point:** decomposes	**Melting Point:** not applicable
Boiling Point: not applicable	**Boiling Point:** not applicable	**Boiling Point:** not applicable
Viscosity: not applicable	**Viscosity:** not applicable	**Viscosity:** not applicable
Water Solubility: insoluble	**Water Solubility:** insoluble	**Water Solubility**: insoluble
Solvent Solubility: insoluble in organic solvents	**Solvent Solubility: insoluble** in organic solvents	**Solvent Solubility: insoluble** in organic solvents

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Asbestos
Flash Point: Not applicable **Method Used:** Not applicable **Autoignition Temperature:** Not applicable

Flammability Limits in Air (Volume %): **UPPER:** Not applicable
LOWER: Not applicable

Unusual Fire and Explosion Hazards: Asbestos materials are negligible fire hazards.

Extinguishing Media: Use extinguishing media that is appropriate to the surrounding fire.

Special Fire Procedures: Fire fighters should wear full protective clothing and self-contained breathing apparatus when this material is involved in a fire.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid temperatures in excess of 600 °C.

Incompatibility (Materials to Avoid): Asbestos materials are incompatible with acids and bases.

See Section IV: *Fire and Explosion Hazard Data*

Hazardous Decomposition or Byproducts: Thermal decomposition of asbestos may release toxic and/or hazardous gases.

Hazardous Polymerization _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X **Inhalation** X **Skin** X **Ingestion**

Actinolite, Anthopyllite, Tremolite Asbestos: Exposure to asbestos dusts may be irritating, producing a severe cough and chest pain. Animal studies indicate that lung tumors or mesotheliomas have occurred with exposure as short as one day. Repeated or prolonged exposure may cause asbestosis, an intetrstitial fibrosis of the lung tissue, which may develop fully within four to nine years; however, onset is typically delayed 20 years to 40 years after the initial exposure. Fatal exposures may be as brief as 3 months during childhood. The initial symptom is a progressive exerttional dyspnea, followed by dry cough and expectoration, chest pain, decreased vital capacity, tachypnea, persistent dry rales, cyanosis, anorexia, malaise, weakness, backache, weight loss, and cor pulmonale. In some cases, clubbing of the fingers and toes has been reported. Secondary lung infections may also occur. Radiologic studies may show a diffuse increase in lung density, pleural plaques, and pleural calcification. Death from asbestosis may be due to respiratory or cardiac failure. Asbestos workers show an increase in pleural and peritoneal mesothelimoas, bronchogenic carcinoma, lung cancer, cancers of the gastrointestinal tract including the esophagus, stomach, colon, and rectum, and also cancer of the larynx. Mesothelial tumors are characterized by bloody effusion with pain, dyspnea, cough, swelling, weight loss, fatigue, hypoatremia, and death due to pulmonary insufficiency. The latent period for mesothelioma is 3.5 years to 40 years; for lung cancer it is 15 years to 30 years. Smoking enhances the risk of lung cancer. Some studies indicate that lymposarcoma and malignant lympoma, renal cancer, and an increased incidence of ovarian cancer may be associated with exposure to asbestos. In addition, cancers of the liver and mammary glands have been reported in rats.

Skin and/or eye contact with asbestos may cause irritation. Asbestos fibers may penetrate the skin and result in asbestos corns, due to the thickening of the skin around the implanted fiber. These usually occur on the hands and forearms. These corns do not lead to skin tumors and are of minor health significance. They disappear on removal of the fibers.

Ingestion of asbestos may cause gastrointestinal irritation. Repeated or prolonged ingestion of asbestos fibers may be involved in cancers of the buccal cavity and pharynx, esophagus, stomach, colon, and rectum. Ingestion of asbestos-contaminated rice has been suggested as the cause for a high incidence of stomach cancer in Japan.

Medical Conditions Generally Aggravated by Exposure: Not Available

Listed as a Carcinogen/Potential Carcinogen (Actinolite, Anthopyllite, Tremolite Asbestos):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X	
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)	X	

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with copious amounts of water for at least 15 minutes while removing contaminated clothing. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance if necessary.

Inhalation: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Lay victim with head and chest lower than hips to improve drainage of fluids from the lungs. Obtain medical assistance.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: upper respiratory tract (URT) and gastrointestinal tract

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Collect material and place into containers for disposal.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store in well ventilated areas.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Source: MDL Information Systems, Inc., MSDS *Actinolite*, 11 December 2001.
MDL Information Systems, Inc., MSDS *Anthophyllite*, 11 December 2001.
MDL Information Systems, Inc., MSDS *Tremolite*, 11 December 2001.
SRMP, MSDS *Bulk Asbestos (Uncommon)*, August 1993.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.

Disclaimer: Physical and chemical data contained in this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however NIST does not certify the data on the MSDS. The certified values for this material are given only on the NIST Certificate of Analysis.